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# Cultural Determinants of Integrated Coastal Fisheries Management Achieving the Blue Economy of the Bononaro Coastal Community of Timor-Leste

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**ABSTRACT:** Long-term economic development of Timor-Leste can be guaranteed its sustainability by relying on productive sectors, namely fisheries resource management, since the last two decades after independence it has only relied on non-renewable oil and natural gas and is predicted to run out in the next two or three decades. Therefore, economic development based on the blue economy is absolutely necessary. According to data from the last 10 years, 68,413 households or 33% of all households in Timor-Leste involved in some form of fisheries activity. Of these fisheries households, 58,473 (85%) are involved in aquaculture, 3,823 households (6%) are involved in fishing alone, and 6,117 households (9%). Now as a member of PEMSEA, Timor-Leste has adopted the 2012 Changwon Declaration and compromised to optimize the implementation of SDS-SEA. Therefore, the country adopted the SDS-SEA Implementation Plan for the region as a timely and important next step in to achieve a marine-based blue economy. This study aims to 1). Find out how Cultural Factors in Integrated Management of Fisheries Sub-sector in Bobonaro Municipality, 2). Find out how Integrated Management of Fisheries Sub-sector affects the livelihoods of coastal communities in Bobonaro Municipality can be an important pillar in the transition of Timor-Leste's blue economy development, 3). Find out how local cultural wisdom (Tara-Bandu) as part of the multifunctional system of Fisheries Sub-sector development in Bobonaro. The research method used in this study is a descriptive quantitative analysis of Contribution and participation in Tara-bandu traditional and cultural ceremonies. The results of this study are expected to find the right method to support the development of the blue economy in Timor-Leste, in an effective and efficient way to create a prosperous and healthy coastal community.

**KEY WORDS:** Blue Economy, Coastal Community, Cultural Determinants, Livelihoods.

## INTRODUCTION

Timor-Leste is an island country located in South Region Asia; the country has a familiar and multifunction agricultural system as second major economic sector after the oil and gas sector. Timor-Leste has an areas for blue economy of the ocean resources represents approximately 87% of the country's gross domestic product (GDP), this comes mainly from offshore oil and gas. Tourism, fisheries and aquaculture can be the main drivers for employment creation, environmental sustainability and food security (Gomes et al., 2024; Nkubitu,2024). Although, the coastal and marine tourism is the third most important sector for the country's economy, makes up only 1% of its GDP. Timor-Leste also has an astonishing setting for ecotourism and related activities such as scuba diving, recreational fishing, whale-watching, and cruises.

According to the report, the National State of Oceans and Coasts (NSOC: 2018), that the Economy Real gross domestic product (GDP) decreased from US$4.16 billion in 2013 to US$3.08 billion in 2014 (in constant 2010 US$) due to lower oil prices. The economy rebounded, with GDP increasing by 20.6% from 2014 to 2015. GDP in 2015 was US$3.72 billion (in constant 2010 US$). The economy contracted in 2015-2017, but grew by 2.81% in 2017-2018. GDP (in constant 2010 US$) increased from US$3.403 billion in 2017 to US$3.499 billion in 2018.

In addition to the ocean economic activities, the ocean provides goods and services, which are not captured in the GDP accounts. Using existing studies, the value of coastal and marine ecosystem services is estimated to be around US$5.25 billion. The ocean economy contributes 87% of the GDP. The total number of people that have been employed in the ocean economy is around 16,077 persons. Indirect jobs employ predicted 26,500 persons in two oil and gas projects (Tasi Mane Suai and Beaço-Viqueque).

The fisheries Contribution to income and livelihood; a) Gross value added (GVA) of fish and other f i s h i n g products in 2015 was US$7,094,571.89., (in constant prices), b) Around 90% of fisheries is artisanal. Given the bathymetry a n d small size of boats, only

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near-shore fishing can be done, and only small, low-valued types of fish can be caught. The part of investment opportunities, aquaculture is a promising industry in Timor- Leste It is still underdeveloped, however, potential areas for various types of aquacultures have been identified. Aquaculture and mariculture in Timor-Leste have been made a priority in the programs of organizations, such as Catholic Relief Services (CRS), WorldFish, United States Agency for International Development (USAID), among others. Livelihood diversification in coastal communities is also promoted. Seaweed culture is playing an increasing role due to the successful project of the National Directorate for Fisheries and Aquaculture (NDFA).

The integrated coastal management (ICM) is a natural resource and environmental management framework which an integrative, holistic approach and an interactive planning process in addressing the complex management issues in the coastal area. The ultimate purpose of ICM is to increase the efficiency and effectiveness of coastal governance in terms of ability to achieve the sustainable use of coastal resources and of the services generated by the ecosystems in the coastal areas, protecting the functional integrity of these natural resource systems while allowing economic development to proceed (Michels-Brito, 2023; Malinconico, 2025; Xue et al., 2025). Timor-Leste become membership of PEMSEA since 2006, participated in more of regional and international events as active member of PEMSEA, adopted the Sustainable Development Strategies of Sea East Asia (SDS- SEA) and accepted with all mechanism and concept of marine and coastal development system.

It was further reported that, the country has adopted the paradigm or concept of the blue economy as defined in the 2012 Changwon Declaration. The blue economy encompasses a sustainable ocean-based economy while promoting innovative and technologies and practices, and ensuring the protection of the marine environment, and the sustainable use and conservation of associated ecosystems, biodiversity, genetic resources and other resources on the seabed.

The livelihoods of coastal communities come from fishing, salt refining, tourism, and the provision of ecosystem services, such as bamboo, mangroves, honey, and fish. For the Blue Economy opportunities, Timor-Leste prepared its first National Review on the SDGs. One of its conclusions was that although Timor-Leste has a clear vision to achieve the SDGs as articulated in its Strategic Development Plan (2011-2030), what is still lacking is the absence of a plan to diversify the economy and create sustainable employment for citizens, especially for young people who make up 74% of the population.

According to Mahmoodi et.al (2024), the cultural factors have an important role in the constituents of security and well-being, culture also contributes to the constituents of good social relations, because the spiritual, aesthetic, inspirational, and educational values transmitted by natural and semi-natural ecosystems can make important contributions to social development and human character. That, land and water are the main supporters of almost every ecosystem on earth, both natural and semi-natural, including traditional land use systems developed by humans. One of the main land use patterns in Timor-Leste, because of its value to the population, is what we can call the sacred land use pattern, which means, simply, the occupation of land in a *lulik* (sacred) manner. The concept of *lulik,* meaning holy or sacred, is a force that can be simultaneously and paradoxically harmful or beneficial, as Grenfell (2020) explains that it is an energy that attracts and repels, that kills and revives.

For most Timorese, land and water are at the heart of all spirituality and this relationship is central to many issues of vital importance in human life. For example, Timorese cosmology itself is closely tied to the perception that the land is sacred. It is worth noting the existence and importance of nature spirits, such as the *Rai Nain* (land spirits) and the *Bée Nain* (water spirits) that the spirits are inhabit or live in nature. These spirits are important because they help and protect humans and provide basic necessities such as water and food and to secure the goodwill of these spirits, people practice rituals and ceremonies that honor these spirits.

The sacred areas can range from trees in mountains, and their boundaries may not be fixed. Lands considered as *lulik* (Sacred) are found throughout the country, from the sacred tracts of Lautem District to the sacred mountain known as Dathoi mountain in Tapo Village of Bobonaro Municipality, from Bemalae Lake in Sanirin Village of Bobonaro to the areca nut forests of Oecusse (Korman, 2023; Rahman, 2019; Rahman & Letlora, 2018). However, there is no accurate data to estimate the extent of the *lulik* land area. These spaces are characterized by their cultural status as sacred, taboos related to rules of behavior, and rules of management of local communities. Cultural services can be considered as the main contribution of sacred land use patterns to well-being, partly because they have no easy substitutes, especially for rural and poor communities. An illustration of this enormous value can be seen in the fact that the spiritual potential of the land is considered a major reason for returning to homeland and as a major benefit of living and working on one own land (Roberts, 2023). The cultural services provided by sacred lands provide key elements that are the basic pillars of cosmology and the characteristics of traditional societies such as land tenure, natural resource management rules, marriage and settlement patterns.

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According to Tilman, V. M. (2012), that the Agriculture in Timor-Leste is mainly family-based, and determining factor in cultural identity, socio-political, and social security, food security, environmental protection, etc. The agriculture in Timor-Leste has multiple functions as well as; economic, social, cultural, rituals and adoration, environmental and ecosystems conservation. For the long-term of development, Timor-Leste needs to make a sustainable economic development plan, must focus more on the management of renewable natural resources so that it can guarantee the sustainability of economic development for the long term, because economic development that only relies on the exploration of oil and gas resources and minerals which are non-renewable natural resources will run out within a certain period of time so that it cannot guarantee the sustainability of the country's economy. In relation to this, the government's policy to adopt an economic development system based on the blue economy is the right step, as most countries in Asia and even in the world are also more focused on developing this blue economy. The expected blue economy development model is sustainable economic development by relying on marine, coastal and aquaculture resources as well as related and relevant sectors, and must be oriented towards environmental interests; a balanced ecosystem and respecting the culture and social life of the community must be the main basis of the planned system. The expected blue economy development system must be based on an integrated system, integrated and accumulative planning based on the interests of the community.

Principals reasons of choosing the research site are : 1) The research local is cover at least 5 to 6 km a long of coastal areas and there are more fisheries activities of fishermen; 2) There is a living laboratory of Fisheries Marine Science Department of Agriculture Faculty of National University “Universidad Nacional Timor-Larosa’s (UNTL), as principal places of students practices, internship activities, scientific research for the students, academic communities and agencies; 3) There is a lake named “Bimala Lake, the main place for coastal and mangrove conservation, fishing and aquaculture activities management, the cultural and local wisdom of community namely “*Tara bandu*” been practices annually. The motivation of choosing this title research is; a) To know how the local wisdom “*Tara bandu*” impacted to integrated fisheries management and its implication to costal community income, b) The common purpose of the research is to see how the culture and local wisdom applied in integrated fisheries management support the blue economic development in Timor-Leste.

This research aims to highlight the importance of cultural values as a social ecosystem in shaping the direction of sustainable fisheries sub-sector development within the framework of future blue economic growth. It is expected to contribute to the formulation of environmentally friendly agricultural development policies that preserve local cultural values, such as local wisdom (Tara Bandu), sacred traditions, and cultural beliefs tied to rituals at traditional sites regarded as sacred places or objects. By integrating these cultural elements with science, technology, and modern management, the study seeks to address the challenges of globalization, modernization, and liberalization, which often prioritize economic profit but risk eroding or even destroying local order and culture.

Furthermore, this research aims to serve as a scientific study that underscores the importance of cultural factors as a social ecosystem in guiding the sustainable development of the fisheries sub-sector within the framework of future blue economic growth. It is expected to contribute to the creation of environmentally friendly agricultural development policies that preserve local cultural values, including local wisdom such as *Tara Bandu*, sacred traditions, and cultural beliefs expressed through rituals at traditional sites regarded as sacred places or objects. By integrating these cultural elements with science, technology, and modern management, the study seeks to address the challenges posed by globalization, modernization, and liberalization—processes that often prioritize economic profit but can simultaneously erode or even destroy local social order and culture.

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**LITERATURE REVIEW**

1. Conceptual Framework

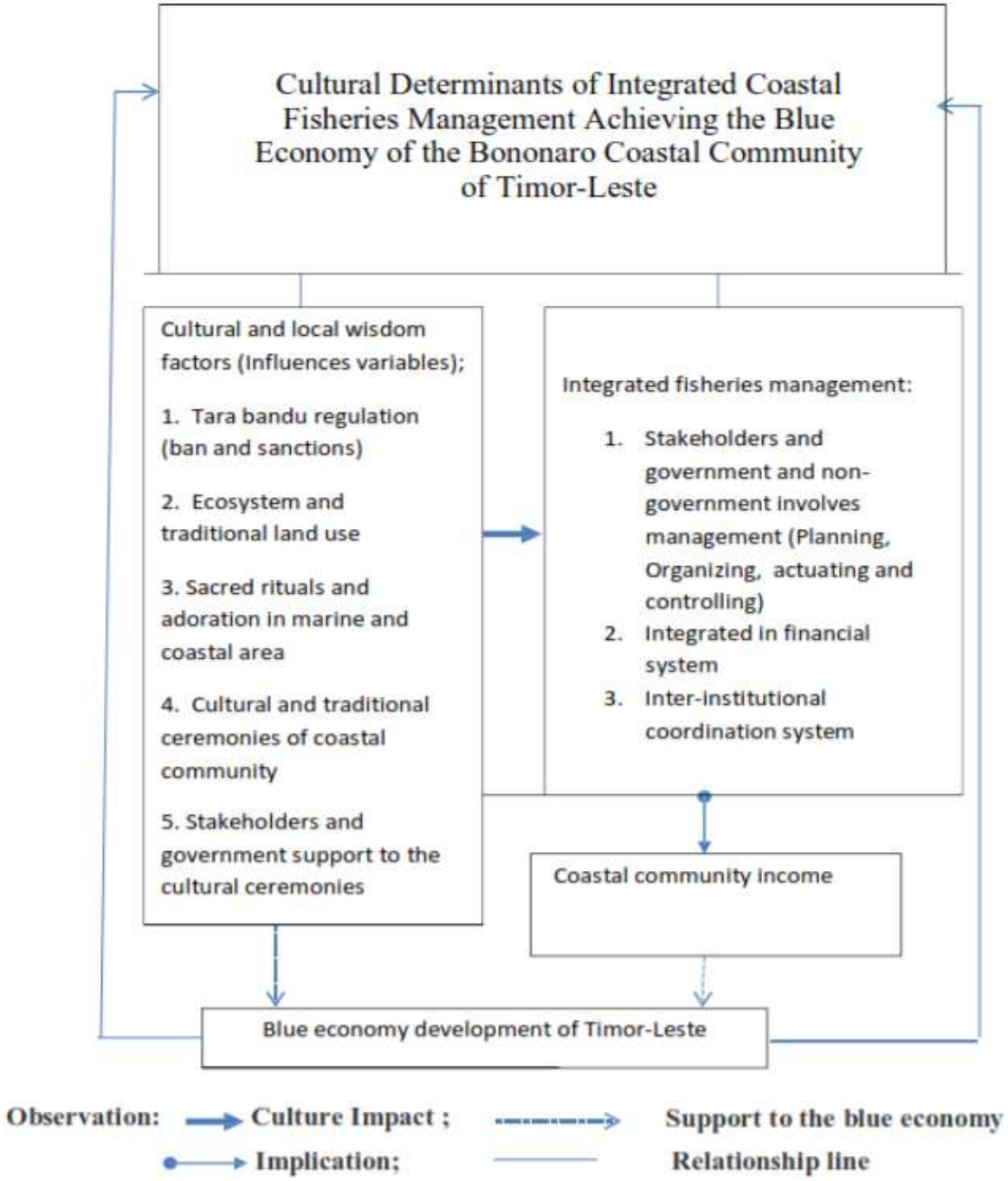


**Figure 1. Conceptual Framework**

The conceptual framework illustrates how cultural determinants and local wisdom influence integrated coastal fisheries management to achieve the blue economy for the Bononaro coastal community of Timor-Leste. On the left side, key cultural and local wisdom factors act as influential variables, including the Tara Bandu regulation (a system of bans and sanctions), ecosystem and traditional land use practices, sacred rituals and adoration in marine and coastal areas, cultural and traditional ceremonies of the coastal community, and support from stakeholders and government for these cultural activities. These cultural factors directly feed into

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integrated fisheries management, which involves active participation of stakeholders, government, and non-government actors in planning, organizing, actuating, and controlling fisheries activities. This management approach is further strengthened through integration into the financial system and coordination among institutions. As a result, coastal community income increases, which in turn supports the broader goal of blue economy development in Timor-Leste. The arrows in the diagram show observation, cultural impact, and implications, highlighting the relationships and feedback loops where cultural values shape management practices that sustain the coastal economy while preserving local traditions and ecosystems.

## METHOD

Methodology, at an applied level, examines, describes, and evaluates research methods and techniques that enable the collection and processing of information to address and resolve problems or research questions. It is the application of procedures and techniques necessary to build knowledge, aiming to prove its validity and usefulness in different areas of society (Saharan et al., 2024). In this study, the researcher follows a series of steps based on the research problem and its underlying logic. Methodology is thus understood as the science of conducting research scientifically. Generally, research methods can be grouped into four principal categories: quantitative research, qualitative research, mixed-method (a combination of qualitative and descriptive quantitative methods), experimental research, and case study research.

### 1 Basic Method

In line with the research title, formulated problems, and stated objectives, this study employs a **quantitative descriptive method** combined with an **explorative approach** to analyze cultural and social data. Three basic techniques are used for gathering data in descriptive research: **observation**, **case study**, and **interview/survey**. Data collection includes questionnaires and interviews to obtain both quantitative and qualitative information. A **mixed-method** approach, also known as **triangulation** in social research, is applied to provide multiple perspectives on a single phenomenon by integrating quantitative and qualitative elements (Lim, 2025).

### 2 Research Location

The research is conducted in **Bobonaro Municipality, Timor-Leste**, specifically in two sub-districts: **Balibo** and **Atabae**, both situated in coastal zones. Within these sub-districts, **Aidabaleten Village (Atabae)** and **Sanirin Village (Balibo)**, located near Bemalae Lake, are chosen as the principal research sites. **Purposive sampling** is used to select these villages due to their similar characteristics (Mills et al., 2013).

### 3 Research Population

The research population consists of individuals and groups capable of providing relevant information and data. These include local residents, cultural leaders, organizational representatives, youth groups, women's groups, and local government agencies present in the research area.

### 4 Research Sample

Using the mixed-method approach, this study applies both **probability** and **non-probability** sampling techniques. Probability sampling methods include **stratified sampling**, **cluster sampling**, **systematic random sampling**, and **simple random sampling** to obtain representative samples across different hamlets. Non-probability techniques, such as **convenience** and **purposive sampling**, are used specifically to determine the research locations and select participants with specific characteristics.

### 5 Research Variables

Given the focus on descriptive quantitative analysis, the research variables align closely with the stated objectives.

- **Independent Variables**:
  1. Tara Bandu regulation (ban and sanctions)
  2. Ecosystem and traditional land use
  3. Sacred rituals and adoration in marine and coastal areas
  4. Cultural and traditional ceremonies of the coastal community
  5. Stakeholder and government support for cultural ceremonies
- **Dependent Variables**:
  - Integrated fisheries management, which includes:

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1. Stakeholder and government/non-government involvement (planning, organizing, actuating, and controlling)
2. Integration into the financial system
3. Inter-institutional coordination system

- **Outcome Variable**: Coastal community income.

**6. Data Collection and Analysis**

Two types of data are collected: **primary** and **secondary**.

- **Primary Data Methods**: Interviews with respondents, direct observation, surveys, and focus group discussions (FGD) using tools such as questionnaires, data sheets, GPS devices, cameras, and tape recorders.
- **Secondary Data Methods**: Documentary and bibliographical records.

Data analysis is designed to answer research questions and meet objectives. Economic analysis will assess how integrated coastal management and multifunctional agricultural and fisheries systems influence community income using formulas such as $\boldsymbol{\pi = TR - TC}$ and **Benefit–Cost (B/C) Ratio** analysis. Statistical tests include **correlation** and **multiple regression** with the formula $\mathbf{Y = b + b1x1 + b2x2 + b3x3 + b4x4 + e2}$, along with **ANOVA**. Focus group discussions will be analyzed using the **Harvard method** and summarized in a narrative report.

**7. Expected Results**

Based on the research objectives, the study aims to: a) Identify cultural factors and their impact on integrated fisheries management in coastal areas. b) Determine how these cultural factors influence coastal community income. c) Explore how cultural factors and integrated fisheries management contribute to the blue economy development of Timor-Leste.

## FINDINGS AND DISCUSSION

**1. Tara Bandu as Governance system in Bobonaro;** as community-imposed rules regulate access, protect spawning grounds, and enforce compliance through social sanctions.

Through ceremonial declarations, community leaders establish binding rules that restrict certain fishing practices, designate seasonal closures, or prohibit extraction from ecologically sensitive areas (such as spawning grounds or coral reefs). Compliance is ensured not by formal state enforcement, but through social sanctions including public shame, exclusion from community benefits, and symbolic rituals that reinforce legitimacy. Tara bandu is always held regularly at Lake Bemalae as a center for coastal and marine conservation in Bobonaro which is held once a year. The Tara-bandu ceremony at Lake Bemalae is carried out collaboratively between the local government, Balibo and Atabae sub-district and involves also Sanirin and Aidabaleten village leaders and traditional leaders from the two villages as the main implementers of ritual and cultural practices that contain the mystical power of mythical stories and ancestral spirits that have very high socio-cultural value and mystical power.

**2. Local Ecological Knowledge** (LEK)**;** Seasonal fishing practices and cultural taboos provide valuable ecological indicators for adaptive management. Coastal communities in Bobonaro maintain a rich body of local ecological knowledge developed through generations of close interaction with the sea. Fishers and gleaners recognize seasonal cycles, tidal patterns, and species migration routes, which guide when and where fishing occurs.

This local Ecological Knowledge provides valuable ecological indicators that often complement or even anticipate scientific data, for example in identifying spawning grounds, monitoring ecosystem shifts, or detecting overfished areas. When incorporated into integrated coastal fisheries management, LEK enhances the adaptive capacity of communities, making management more responsive and grounded in local realities. Moreover, aligning LEK with formal scientific monitoring strengthens trust between communities and government agencies, ensuring more effective and culturally legitimate management outcomes. The lake of Bemalae is a cultural, natural, and socio-cultural site with significant economic and tourism potential, as well as rich of coastal and marine ecology. It is designated as a living laboratory by the Department of Fisheries and Marine Science of Agriculture Faculty, Universidade Nacional Timor-Lorosa'e (UNTL), and serves as a research and practice center for students and academics.

**3. Social Capital & Compliance;** Strong kinship networks and traditional leadership support high levels of compliance in resource management.

Bobonaro's coastal communities, social capital the networks of trust, reciprocity, and collective identity plays a decisive role in

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ensuring compliance with fisheries management rules. Strong kinship ties and the authority of traditional leaders create both moral and social incentives for individuals to follow community-agreed regulations such as tara bandu closures.

Enforcement is less reliant on external policing and more on peer accountability: breaking rules risks social exclusion, loss of reputation, and weakened standing in communal activities such as rituals, cooperative work, or resource sharing. These informal sanctions are often more effective than legal penalties in remote coastal settings where state monitoring capacity is limited.

High levels of compliance, driven by social cohesion, result in better protection of critical habitats and more sustainable harvest practices. Moreover, social capital enables collective action, such as joint monitoring of marine areas, collective decision-making in co-management committees, and mutual support when transitioning to alternative livelihoods. When recognized and supported by formal governance structures, social capital strengthens the legitimacy and long-term sustainability of integrated fisheries management. In addition to being a center for academic education, practice and research conducted in Lake Bemalae as a living laboratory, Conservation International (CI) has also established a Marine Protected Area whose main objective is to ensure the conservation of coastal and marine ecosystems and environments, reserve fish and non-fish resources to ensure the maintenance of biological balance, biodiversity, coral reef conservation maintain and protect them from damage, and guarantee the rights of local communities to utilize their natural potential, and especially to become the right to social and cultural capital from the Bemalae Lake and its coastal and marine ecosystems.

**4. Gender Dimensions:** Women play key roles in gleaning, fish processing, and marketing but remain underrepresented in decision-making bodies.

Women in Bobonaro is coastal communities are central actors in the small-scale fisheries value chain, particularly in gleaning nearshore resources, processing fish products, and marketing catches in local markets. These activities provide critical household income and food security, making women indispensable to the sustainability of the coastal economy. Despite this, women remain underrepresented in decision-making bodies related to fisheries management, such as village councils or tara bandu assemblies, where rules on access, closures, and enforcement are set.

This exclusion limits the integration of women's knowledge especially their expertise on coastal ecosystems, species abundance, and market dynamics into formal management. It also perpetuates gender inequities in resource access and benefit sharing. Recognizing and institutionalizing women's roles through gender-sensitive policies, inclusive co-management structures, and capacity-building programs can strengthen the social legitimacy, equity, and effectiveness of integrated fisheries governance. Women play a very important role in helping to increase family income through economic activities, ecotourism, and taking coastal and seaside products, especially fishing activities that have economic value when marketed and can be consumed by the family to fulfill nutritious protein needs, especially for children.

**5. Blue Economy Potential**

Integrating cultural practices with formal marine policy can yield sustainable fisheries, biodiversity protection, and diversified local livelihoods.

The Bobonaro coastal community demonstrates how cultural practices such as *tara bandu*, local ecological knowledge, and social capital can be harmonized with formal marine policies to strengthen fisheries governance. By integrating these cultural determinants into state-led frameworks, coastal management can achieve not only sustainable fisheries but also broader Blue Economy outcomes, including biodiversity conservation, eco-tourism development, and livelihood diversification.

For example, traditional seasonal closures can be formally recognized as marine protected areas (MPAs) under national law, ensuring legal protection while preserving community legitimacy. Likewise, supporting community-led monitoring and enforcement reduces government costs while strengthening compliance. Diversifying livelihoods through eco-tourism, aquaculture, and value-added fish processing creates alternative income streams, reducing pressure on marine ecosystems and enhancing local resilience.

This integration builds a pathway where cultural governance systems and formal marine policy complement one another, creating a hybrid governance model that aligns with Timor-Leste's national Blue Economy strategy. The outcome is a win–win scenario: ecological sustainability, food security, and socio-economic development for Bobonaro's coastal communities. The blue economy concept is the right choice to ensure the sustainability of the country's economic development. However, in practice, this concept needs to be implemented side by side, taking into account the socio-cultural values of the community, to avoid conflicts of interest and ensure significant benefits for the local community, both economically, socio-culturally, and ecosystems, both land and sea.

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Harmonizing the blue economy concept and the socio-cultural aspects of the community, for example, tara bandu, will better ensure the success of sustainable blue economy development. Timor-Leste has developed a Blue Economy Policy and Action Plan for the 2025-2035 period.

Sustainable development of the marine and coastal sectors. The National Oceans Policy (NOP) regulates an integrated inter-agency approach to marine issues such as pollution, climate change adaptation, marine space use, and ecosystem conservation.

1-Working together: An integrated participatory ocean governance system, which facilitates collaboration across jurisdictions, allows for the exchange of knowledge, data, ideas, skills, and experience, and recognizes and considers local customary law, national law, and international and regional commitments;

2- Securing national jurisdictions and exercising sovereign rights over our oceans: maintenance and protection of the rights of Timorese people to equitably and sustainably use and manage their marine natural resources;

3- Our future: a diverse Blue Economy based on the sea;

4- Strengthening our natural defense: protecting, maintaining and restoring coastal and ocean resources and ecosystem services;

5- Investing in our people: developing the capacity of Timorese to engage in ocean based development and protection through research, education and capacity building; and

6- Climate change vulnerability, adaptation and mitigation.

The National Ocean Policy (NOP) , as a basic guideline for the development of the fisheries sector, encompasses various related aspects and has set six objectives, and the third objective specifically addressing the blue economy aspect.

**6. Discussion**

The findings from Bobonaro's coastal community highlight how cultural determinants embodied in tara bandu, local ecological knowledge, social capital, and gender roles form the backbone of community-based resource management. These cultural systems are not relics of the past but dynamic governance mechanisms that provide ecological stewardship, enforce compliance, and ensure social legitimacy. Tara bandu, demonstrates that cultural authority can be more effective than state enforcement in contexts where government monitoring capacity is limited. When supported rather than sidelined by formal institutions, these customary laws can strengthen compliance, protect spawning grounds, and build a conservation ethic rooted in spiritual belief and social obligation.

Local ecological knowledge offers low-cost and adaptive monitoring tools that can complement scientific data collection. This knowledge is especially valuable in a context of climate variability, where communities can provide early warning signs of ecological change. The underrepresentation of women in decision-making bodies, however, signals a missed opportunity for more inclusive and effective governance. Women's contributions in gleaning, processing, and marketing fisheries resources are essential to household and community resilience, yet their exclusion reinforces inequities and reduces the diversity of knowledge available for fisheries management. Addressing this gender gap is vital for aligning integrated management with Blue Economy principles of equity and inclusivity. Finally, the integration of cultural practices with formal marine policy represents a pathway to the Blue Economy in Timor-Leste. Instead of imposing top-down regulations that risk alienating communities, policies that recognize and institutionalize cultural governance systems can yield synergistic outcomes: sustainable fisheries, biodiversity conservation, and diversified local livelihoods. This hybrid model of governance—where cultural legitimacy meets formal recognition—can serve as a blueprint for other coastal regions of Timor-Leste.

In sum, the case of Bobonaro shows that the Blue Economy is not only a technical or economic project but also part of cultural . Its success depends on integrating traditional governance systems, strengthening social capital, addressing gender inequalities, and aligning local practices with national policy frameworks. Such an approach ensures that fisheries management is ecologically sustainable, socially equitable, and culturally grounded. The fisheries sector development model, especially the development of coastal and marine areas that refers to SDG 14 must lead to the intensity of blue economy development as a commitment of Timor-Leste as stated in the 2012 Changwon Declaration. However, the main concern is that the development system needs to be designed to be integrated, coordinated, and controlled by taking into account the importance of local community participation as the main actors in planning, implementation, evaluation, and supervision. It is necessary to take into account the socio-cultural strength of the community, especially tara bandu with concrete practices and cultural rituals that have historic and sacred values as a force that can support the successful implementation of the blue economy in Timor-Leste.

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## CONCLUSION

The Bobonaro coastal community demonstrates that cultural determinants as well tara bandu, local ecological knowledge, social capital, and gender dynamics are central to effective fisheries management. These systems ensure compliance, protect critical habitats, and maintain social cohesion, while offering low-cost and adaptive mechanisms for monitoring and enforcement. Integrating these cultural governance practices with formal marine policies creates a hybrid management model that aligns with Timor-Leste's Blue Economy goals. Such integration strengthens ecological sustainability, supports biodiversity conservation, and fosters diversified livelihoods, while ensuring that management is culturally legitimate and socially inclusive. Addressing gender gaps and formally recognizing community-led initiatives like tara bandu are essential for maximizing the effectiveness of integrated coastal fisheries management. Policies that respect and institutionalize cultural practices can therefore transform Bobonaro's fisheries into a model of sustainable, equitable, and locally led Blue Economy development. Women's involvement is an important factor in supporting increased family income, environmental conservation, and protecting community traditions and culture as the roots and guidelines for local community life.

The success of Timor-Leste's Blue Economy in coastal areas depends not only on economic and ecological strategies but also on leveraging local culture, knowledge, and social institutions as foundations for resilient, adaptive, and inclusive governance. The basis and guidelines for developing the fisheries and marine economy sectors are the National Ocean Policy, and the six objectives of the NOP explicitly establish a blue economy as the third objective. Based on the system recommended by Sustainable Development in the Sea East Asia (SDS-SEA), the proposed integration method for coastal development, Integrated Coastal Management (ICM), is the appropriate model to implement in Timor-Leste.

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